

CLAIMS

1. An electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed, wherein it is characterized in that bonding interface is formed on the carrier foil, electrodeposited copper foil which both side have smooth surface is formed on the bonding interface and resin layer is formed on the electrodeposited copper foil.
2. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 1, wherein the resin layer is comprised of 20 to 80 parts by weight of epoxy resin which includes curing agents, 20 to 80 parts by weight of solvent-soluble aromatic polyamide resin polymer and curing accelerator which is added in a suitable amount when required.
3. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 2, wherein aromatic polyamide resin polymer is prepared by chemical reaction of a aromatic polyamide resin with a rubbery resin.
4. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 3, wherein the resin layer contains dielectric fillers.

5. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 3, wherein the resin layer contains a skeletal material.
6. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 5, wherein the electrodeposited copper foil has rustproofing layer on the side to be coated with the resin.
7. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 6, wherein the rustproofing layer is composed of a nickel-zinc alloy.
8. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 6 or claim 7, wherein the rustproofing layer is composed of a chromate layer on the nickel-zinc alloy layer.
9. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 7 or claim 8, nickel-zinc alloy as a component of rustproofing layer comprises 50 wt% to 99 wt% of Nickel and 50 wt% to 1 wt% of zinc with inevitable impurities.

10. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 6 to 9, wherein a silane coupling agent layer is provided between the electrodeposited copper foil layer and the resin layer.

11. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to claim 10, wherein the silane coupling agent layer is formed by amino-functional silane coupling agent or a mercapto-functional silane coupling agent.

12. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 11, wherein a thickness of the electrodeposited copper foil is in the range from 0.5  $\mu\text{m}$  to 12  $\mu\text{m}$ .

13. The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 3, wherein the surface roughness in  $R_z$  at both surfaces of the electrodeposited copper foil is not more than 2  $\mu\text{m}$ .

14. A copper clad laminate which is produced by using the electrodeposited copper foil with carrier foil on which resin

layer for forming insulating layer is formed according to any one of claims 1 to 13.

15. A printed wiring board which is produced by using the electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 13.

16. A method for producing a multilayer copper clad laminate by using the electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 13, which is characterized in that the method has process steps A to E as shown below;

Step A: Double sided copper clad laminate to be an inner layer board is drilled to have a holes to be through-holes and/or via-holes, followed by treatment for removing residues i.e. desmearing if required.

Step B: Inside wall of the holes made in step A to be through-holes and/or via-holes are plated with thin copper layer to perform inter layer connection.

Step C: Double sided copper clad laminate to be an inner layer board after finishing plating of thin copper layer for inter layer connection made in step B is coated with plating resist film and then expose and develop the resist pattern to leave the resist film on the portion where no wiring is formed.

Step D: On the portion of the double sided copper clad laminate to be an inner layer board where no wiring is formed, electrolytic copper plating is performed to form inner layer wiring pattern and then plating resist is removed followed by etching of the copper layer on the copper clad laminate to finish inner layer wiring board.

Step E: The electrodeposited copper foil with carrier foil on which resin layer for forming insulating layer is formed according to any one of claims 1 to 13 is laminated on one side or both side of the inner layer wiring board made in step D through hot press, followed by releasing of the carrier foil to get multilayer copper clad laminate which has 3 or more conductive layers.

17. A method for producing a multilayer copper wiring board by etching the outer layer copper foil on the multilayer copper clad laminate according to claim 16, which is characterized in that the method has process steps 1 to 4 as shown below;

Step 1: Multilayer copper clad laminate is drilled to have a holes to be a blind via-holes, followed by a treatment for removing residues i.e. desmearing if required.

Step 2: Inside wall of the holes made in step 1 is plated with thin copper layer to finish blind via-hole for performing inter layer connection.

Step 3: Multilayer copper clad laminate after finishing plating of thin copper layer for inter layer connection made in step 2 is coated with plating resist film and then expose